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A survey of the genus *Eupithecia* (Lepidoptera, Geometridae) in mainland South East Asia: Part II

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Abstract The *Eupithecia* fauna of mainland South East Asia is surveyed in the two parts to this paper, drawing on previous publications and newly collected material. A total of 51 species is recorded, including 15 which are described as new. Habitus and genitalia are illustrated for all new species, and for older species where illustrations are not available in recent papers. A further 6 previously described species are synonymised. Part II of the paper deals with previously described species.

Key words South Eastern Asia, Lepidoptera, Geometridae, Eupithecia, revision, taxonomy, synonymy, distribution.

Introduction

This paper forms one of a series designed to survey the Asian *Eupithecia* fauna, both assembling records, and clarifying the identity of species described in earlier years, and bringing together new records derived from more recent collecting. It follows papers on *Eupithecia* in the Western Himalayas (Mironov *et al.*, 2008*a*, *b*, *c*), and in Taiwan (Mironov & Galsworthy, 2007). The geographical area covered in this paper is mainland South East Asia, including Myanmar, Thailand, Laos, Vietnam, and Malaysia, and in two cases the Philippines, though it is not a complete survey of the genus in the latter country.

A full introduction and acknowledgements were given in part I of the paper, which described 15 new species. This second part of the paper deals with previously described species, which have either been previously recorded from S.E.Asia, or are newly recorded there. Space does not permit the illustration of all species, but we have tried to include habitus and genitalia illustrations for all species for which such illustrations are not readily available in modern papers. All records from the area of which we are aware have been included. Six new synonyms are created, and a full list of taxonomic changes in both parts of the paper is included at the end.

Abbreviations. BMNH: The British Museum (Natural History), London, United Kingdom; MNHN: Muséum National d'Histoire Naturelle, Paris, France; NSMT: National Science Museum, Tokyo, Japan; TTM: Termeszettudomanyi Muzeum Allattara (Hungarian Natural History Museum), Budapest, Hungary; ZFMK: Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn, Germany; ZSM: Zoologisches Staatssammlung München, Germany; SMNK: Staatliches Museum für Naturkunde, Karlsruhe, Germany; ZISP: Zoological Institute, Russian Academy of Sciences, Saint Petersburg, Russia; IAET: Institute of Agriculture and Environment, Estonian Agricultural University, Tartu, Estonia; coll GL: coll. Gyula M. László, Budapest.

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Previously described species

Eupithecia russeola Prout, 1926 (Fig. 1)

Eupithecia russeola Prout, 1926, *J. Bombay nat. Hist. Soc.* **31**: 315. Holotype ♂ (BMNH), [Burma (upper)]: Hparé.

This species, hitherto known only from Prout's original material from northern Myanmar, has now been seen in addition from northern Thailand. The genitalia are described for the first time.

Diagnosis. A medium-sized species, with fairly broad, elongate fore wings, and rather small rounded hind wings. Ground colour of fore wings orange-brown, washed with mid brown along costa and termen, more widely along dorsal edge, and in a postmedial band. Transverse lines weakly marked. Hind wing much paler, ground colour dirty grey, shaded darker brown along anal margin and lower part of termen. Discal dots small but well marked on all wings.

Male genitalia (Fig. 14). Uncus biapical, triangular in ventral view. Valve gently tapering towards apex, with rounded tip. Sacculus expanded and lightly sclerotized in a half-moon shape; saccus broad, square at apex. Aedeagus shorter than valve, very stout; vesica armed with three stout cornuti at apex, an irregular plate and a sclerotized knot at base. Eighth sternite elongate, tapering slightly towards apex, with a deep basal hollow, and two sclerotized arms on outer edges of apical half, extending beyond apex; apical hollow very deep.

Female genitalia (Fig. 17). Bursa copulatrix globular, armed throughout with strong spines. Ductus bursae broad, the anterior half evenly sclerotized, the posterior half membranous, tapering gradually to colliculum, the latter rather large and broad, and only lightly sclerotized. Ductus seminalis attached to upper part of ductus bursae, broadly expanded distally, the expanded part being slightly longer than the bursa. Tergite A8 square. All apophyses narrow and weakly sclerotized. Papillae anales parallel sided and rounded at apex.

Note. This species belongs to the *propagata* group (the *inepta-sacrosancta* group of Vojnits, 1984). When fresh the combination of orange-brown and darker brown on the fore wing is distinctive, but the species is probably best distinguished in the male by the ornamentation of the aedeagus vesica, which is distinctive, and in the female by the general form of the genitalia, which is unique within the group.

Range. Myanmar, Thailand.

Material examined. 1♂, Hparé, N. E. Burma, Sept 1923, A. E. Swann, *Eupithecia russeola* Prout type, L. B. Prout coll., BM 1939-643, BM geometrid slide no. 16413 (holotype, BMNH); 1♂, same data (BMNH); 3♂1♀, North Thailand, Prov. Chiang Mai, 1,800 m, 4 km S. of Kop Dong, 99°03 E, 19°52′N, 29–30. x. 2002 (2♂, Galsworthy slide no. ACG GL76♂), 6. xi. 2002 (♀, Galsworthy slide no. ACG GL77), and 11. xi. 2002, leg. B. Herczig and G. Ronkay (all coll. GL).

Note. A further male from Kangfang mentioned by Prout (1926) is absent from the BMNH series.

Eupithecia niveivena Prout, 1928 (Fig. 2)

Eupithecia niveivena Prout, 1928, *Novit. zool.* **33**: 180. Holotype ♀ (BMNH), Ceylon [Sri Lanka]: Pundaloya.

This species, hitherto known only from Sri Lanka, is new to the fauna of Thailand. The genitalia are described for the first time.

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Diagnosis. *E. niveivena* can be distinguished easily from other Asian *Eupithecia* by the rich reddish-brown colour of the fore wing with a whitish yellow transverse line dividing the medial area outside the discal dot, and also usually by the presence of a whitish yellow costal spot between the medial and terminal areas on the fore wing.

Male genitalia (Fig. 15). Uncus slim and elongate, biapical. Valve rather narrow, elongate, with slightly bowed dorsal margin near base, evenly curved ventral margin and rounded apex; sacculus weakly sclerotized. Vinculum short and broad, semicircular with shallow medial hollow. Papillae on anterior arms of labides short, covered with long setae. Aedeagus slim and elongate, shorter than length of valve. Vesica multiply granulate, armed with one small, longitudinally folded, H-shaped cornutus and a second small, folded, irregular cornutus near ductus ejaculatorius base. Sternite A8 two long, parallel, pointed arms, connected with each other by a short and narrow band at base; basal hollow relatively deep; apical hollow membranous, broad and deep.

Female genitalia (Fig. 19). Bursa copulatrix membranous and spineless, ovoid, with membrane partly sclerotized in some specimens. Ductus bursae narrow and elongate, slightly bulging and heavily sclerotized on the left side, and meeting ovoid bursa at mid point, bursa lying at a diagonal angle to the ductus. Ductus seminalis long and very narrow, attached to one end of corpus bursae from right side. Colliculum collar-like, narrow and slightly elongate. Antrum membranous, elongate and narrow. Tergite A8 rectangular, narrow and elongate, with medially prominent and sclerotized anterior margin and with rounded posterior corners. Anterior and posterior apophyses narrow and elongate; posterior apophyses slightly expanded and flattened at their apices. Papillae anales medium-sized, covered with medium length setae.

Range. Sri Lanka, Thailand.

Similar species. This species belongs to the *tenuiata* group (Mironov, 1990). The male genitalia are typical for species of this group, in particular, the shape of the valve, lacking any ventral process, the shape of the eighth sternite, and especially the vesica with a small, longitudinally folded, H-shaped cornutus near the ductus ejaculatorius base. The longer uncus, the wide vinculum with a shallow medial hollow, the slim, longer aedeagus in the male genitalia should distinguish *E. niveivena* from other species of the *tenuiata* group. The female genitalia are similar to those of *E. tenuiata* (Hübner, 1813) in the shape of the corpus and ductus bursae, yet easily distinguished by the total absence of spines in the corpus bursae, the shorter antrum and apophyses, and the shapes of the eighth tergite and papillae anales.

Material examined. 1 , Pundaloya, Ceylon, Mar 1899, '*Tephroclystia atrisignis* Butler ab *niveivena* type ♀ Warren', '*Eupithecia niveivena*' Prout ♀ type, Ceylon (Green), Rothschild bequest 1939-1, BM geometrid slide no. 20128 (holotype, BMNH); 1♂, Thailand, Changwat Nan, 30 km E of Pua, 1,700 m, 2. ii. 2000, leg. Hreblay & Szabó (ZFMK); 1♀, same locality and date (ZFMK); 2♂1♀, N-Thailand, Nan Prov., Pua, Dol Phu Kha km 35, 1,680 m, 19, 20 and 24. ii. 1993, leg. D. Stüning (ZFMK); 1♀, Thailand, Prov. Chiang Mai, Mt Doi Phahompok, 20 km NW of Fang, 2,150 m, 28–29. i. 2004, leg. A. Szabó, Mironov slide no. 574♀ (coll. GL).

Eupithecia anasticta Prout, 1926 (Fig. 3)

Eupithecia anasticta Prout, 1926, J. *Bombay nat. Hist. Soc.* **31**: 317. Holotype ♀ (BMNH), [Burma (upper)]: Hpimaw Fort.

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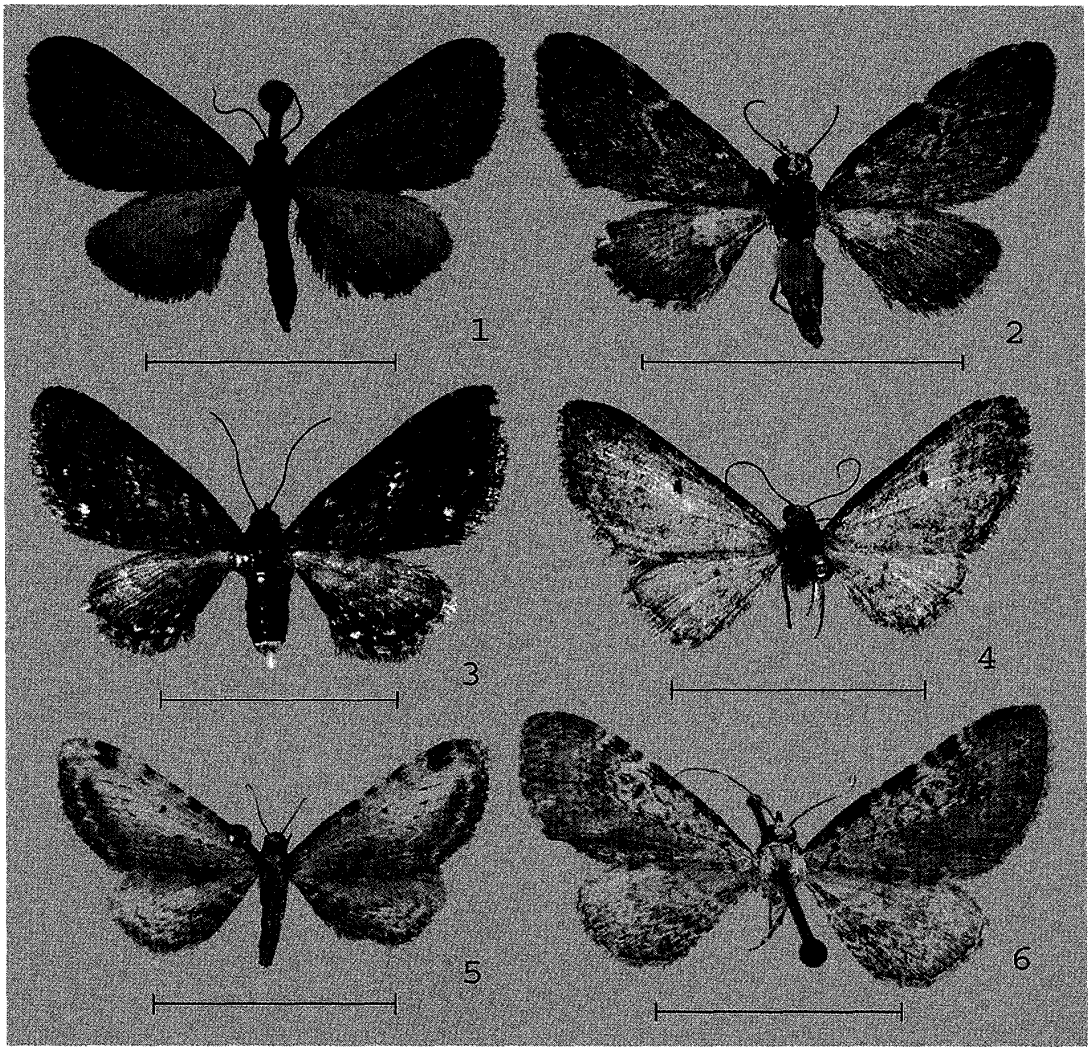

Figs 1–6. *Eupithecia* adults (scale bars=1 cm). 1. *E. russeola* Prout, 1926 (Thailand). 2. *E. niveivena* Prout, 1928 (Thailand). 3. *E. anasticta* Prout, 1926 (Laos). 4. *E. acyrtoterma* Prout, 1926 (holotype). 5. *E. leucenthesis* Prout, 1926 (paratype, *E. albicans* Vojnits, 1981). 6. *E. sinicaria* Leech, 1897 (holotype).

This typical representative of the *haworthiata* species group (Vojnits, 1972) was previously known only from the unique holotype, from northern Myanmar. However, some specimens (including males) have now been discovered, from Sikkim and Laos.

Diagnosis (♂♀). A rather small, dark species. Fore wing a uniform dark brown, with transverse lines faintly marked in slightly darker brown, edged with fawn; submarginal line white and wavy, faint except at tornal angle, where it forms a large white dot, with a second smaller one a short way above it. Hind wing only slightly paler, with a number of white dots scattered around tornal area. Discal dots small and inconspicuous on both wings, that on fore wing slightly elongate.

Male genitalia (Fig. 16). Uncus membranous, plate-like. Valve shaped like the segment of an orange, with almost parallel dorsal and ventral margins in the basal half and tapered to the apex. Vinculum relatively short with shallow medial hollow. Papillae on the anterior arms of labides short and broad, tapered to apices, covered with long setae. Aedeagus elongate and narrow, shorter than length of valve, with two developed lateral hirsute lobes.

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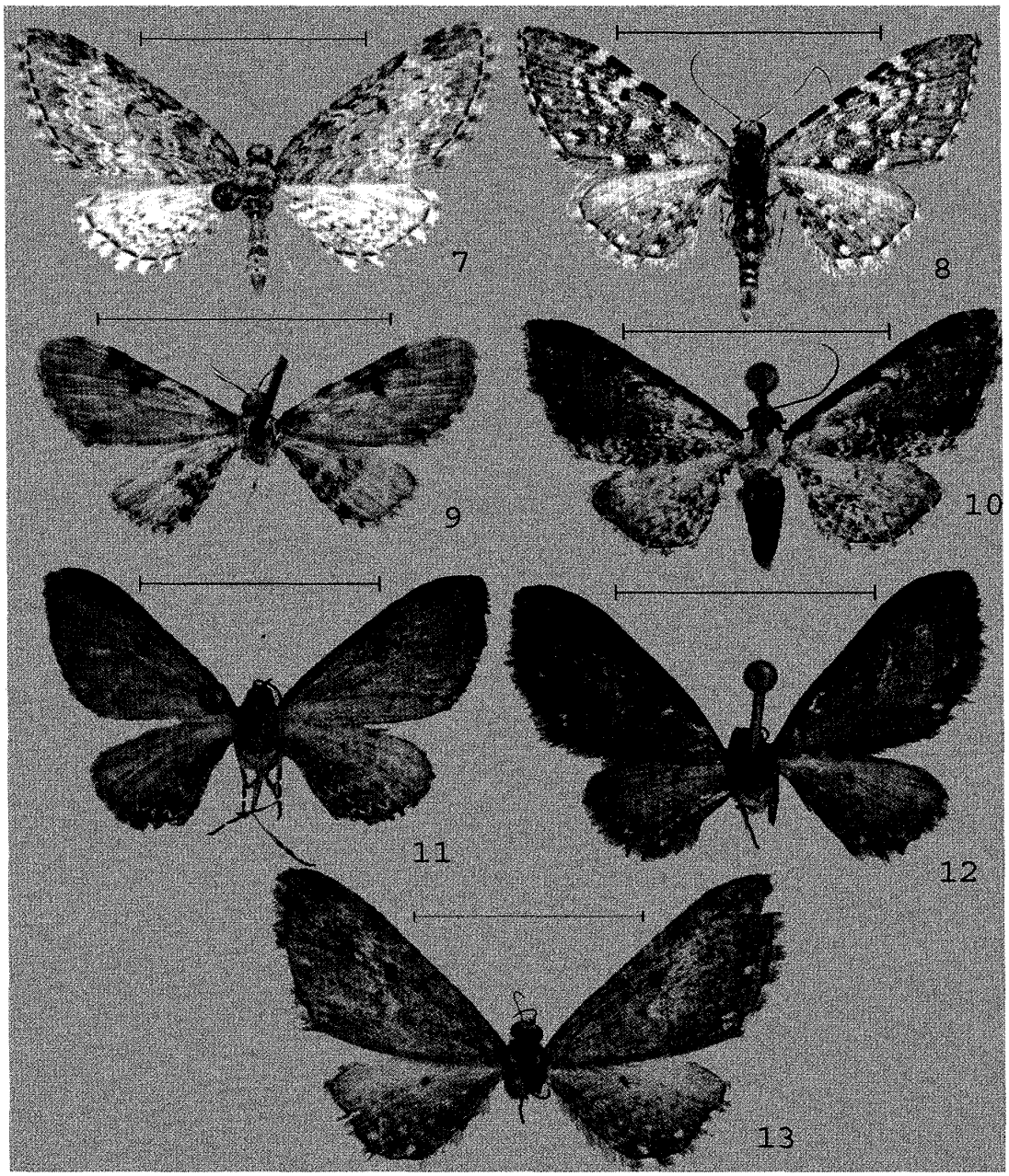

Figs 7–13. *Eupithecia* adults (scale bars=1 cm). 7. *E. jermyi* Vojnits, 1976 (Vietnam). 8. *E. leucospila* Swinhoe, 1906 (India). 9. *E. nigrinotata* Swinhoe, 1895 (India). 10. *E. phulchokiana* Herbulot, 1984 (Thailand). 11. *E. balintzsolti* Vojnits, 1988 (Laos). 12. *E. raniata* Prout, 1958 (Laos). 13. *E. krampli* Vojnits, 1979 (holotype).

Vesica armed with two small, elongate, plate-like cornuti near ductus ejaculatorius base. Sternite A8 with two long and narrow parallel rods, slightly expanded at their apices and connected with each other by a narrow basal band.

Female genitalia (Fig. 18). Bursa copulatrix oval, membranous except for two large rectangular patches of large spines on opposite walls. Ductus bursae virtually absent, the elongate and narrow colliculum abutting straight onto the bursa; ductus seminalis narrow, attached to posterior part of bursa near colliculum; antrum elongate, expanding gradually from colliculum. Tergite A8 elongate with medially prominent anterior margin, and both sets of

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apophyses unusually long and stout. Papillae anales elongate and tapered to apices.

Range. Sikkim, Myanmar, Laos.

Material examined. 1♀, Upper Burma, Hpimaw Fort, Nr Myitkina, 8,000 ft, 9–13. viii. 1923, Capt A. E. Swann, '*Eupithecia anasticta* Prout ♀ type, BM 1923-488, BM geometrid slide no. 20305 (holotype, BMNH); 4♂, Sikkim, Mt Kanchenjunga SE, 27°30′N, 88°20′E, 2,650 m, 4. viii. 1995, leg. E. Afonin & V. Siniaev, *ex* Coll. A. Schintlmeister, Mironov slide no. 591♂ (ZFMK); 5♂4♀, same locality and collectors, 2,600 m, 9–10. viii. 1995, Mironov slides nos 592♂–593♀ (ZFMK, ZISP); 2♀, Laos, Sam Neua Phu Pan, 1,750 m, 15–17. x. 2005, leg. Mamoru Owada (NSMT).

Eupithecia acyrtoterma Prout, 1926 (Fig. 4)

Eupithecia acyrtoterma Prout, 1926, *J. Bombay nat. Hist. Soc.* **31**: 317. Holotype ♂ (BMNH), [Burma (upper)]: Hpimaw Fort.

Known only from the unique holotype. The male genitalia are described for the first time.

Diagnosis (♂). A rather uniform species, predominantly pale grey on both fore and hind wings, with well-marked rather large fore wing discal dots, and more weakly marked ones on the hind wings. Transverse lines almost absent on fore wing, represented only by dark spots on the costa; terminal area shaded irregularly darker.

Male genitalia (Fig. 20). Uncus biapical. Valves very broad, with sacculus expanded into a broad sclerotized plate, protruding as a rounded extension at apex, and having a semicircular lobe at middle. Papillae on the anterior arms of labides narrow and elongate; vinculum relatively large, trapezoid. Aedeagus armed with two large cornuti near apex, both sharply pointed, one straight, and one strongly curved. Sternite A8 subrectangular, the apical third narrowing sharply, and terminating in two diverging well sclerotized pegs.

Female. Unknown.

Material examined. 1♂, Hpimaw fort, 14–18 August 1923, A. E. Swann, BM Geometrid slide no. 6161 (holotype, BMNH).

Range. Northern Myanmar.

Similar species. Judging from the sclerotized sacculus of the valve, the two stout, heavily sclerotized horn-like cornuti on the vesica of the aedeagus and the shape of sternite A8, this species probably belongs to the *egenaria* group of species (Mironov, 2003). It is externally similar to *E. raniata* Prout, 1958, but is easily distinguished by the male genitalia, which are similar to those of the Taiwanese *E. karapinensis* Wileman & South, 1917. However, the valve is broader with a longer obtuse projection in the middle of the ventral margin, vesica with only two horn-like cornuti (*E. karapinensis* has three horn-like cornuti) and the eighth sternite narrower in the basal part, with two shorter and broader apical pegs than those in *E. karapinensis*.

Eupithecia leucenthesis Prout, 1926 (Fig. 5)

Eupithecia leucenthesis Prout, 1926, *J. Bombay nat. Hist. Soc.* **31**: 318. Syntypes 1♂, 2♀ (BMNH), [Burma (upper)]: Hparé.

Eupithecia albicans Vojnits, 1981, *Acta zool. Acad. Sci. hung.* **27**: 225, figs 10, 11. **Syn. n.**

Diagnosis (♂♀). The unique combination of white on both fore wing and hind wing, with scattered markings of warm brown make this an easy species to identify, at least when it is

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in fresh condition.

Examined material. 1♂, Hparé, Burma, ix. 1923, A. E. Swann, *Eupithecia leucenthesis* Prout type, Rothschild bequest 1939-1, BM Geometrid slide no. 20307 (holotype, BMNH); 1♀, data as holotype, *Eupithecia leucenthesis* Prout paratype, BM Geometrid slide no. 20308 (paratype, BMNH); 1♂, Nepal, Dudh Kosi Tal, 3,500 m, 22–23. vii. 1962, leg. G. Ebert & H. Falkner, Holotypus *Eupithecia albicans* Vojnits det. A. Vojnits, Vojnits slide no. 10648, ZSM slide no. G10628 (holotype of *E. albicans*, ZSM).

Range. Nepal, northern Myanmar.

Note. Prout's holotype and paratype of *E. leucenthesis* are in very worn condition, but, though very smudged, show a distribution of white and brown markings corresponding well with the much fresher holotype of *E. albicans* Vojnits, 1981 (illustrated as *Eupithecia ruficorpus* in Inoue (2000)). Both male and female genitalia (Figs 21, 23 respectively) of *E. leucenthesis* and *E. albicans* are identical in all important respects, with only minor variations in the toothed cornutus in the male aedeagus. Prout's description refers to a male holotype and two female paratypes: however only the holotype and one female paratype are in the BMNH series.

Eupithecia tricrossa Prout, 1926

Eupithecia tricrossa Prout, 1926, *J. Bombay nat. Hist. Soc.* **31**: 316. Holotype ♂, (BMNH), [Burma]: Hpimaw Fort.

Eupithecia multa Vojnits, 1981, *Acta zool. Acad. Sci. hung.* **27**: 234, figs 19, 20. Holotype ♂ (ZSM), Nepal: Prov. Nr. 2, East Bhandar under Thodung, 2,200 m.

Eupithecia suspiciosa Vojnits, 1983, *Acta zool. Acad. Sci. hung.* **29**: 267, fig. 10. Holotype ♀ (ZSM), Nepal: Prov. Nr. 2, East Bhandar under Thodung, 2,200 m.

This species, which was originally described from Upper Burma, was treated in Galsworthy & Mironov (2005). We have seen no modern material from S.E. Asia.

Range. Southern Himalayas from Nepal into Tibet, Bhutan, Sikkim, N. E. India and northern Myanmar.

Eupithecia robiginascens Prout, 1926

Eupithecia robiginascens Prout, 1926, *Novit. zool.* **33**: 9. Holotype ♂ (BMNH), Bhutan, Buxa.

Eupithecia captiosa Vojnits, 1984, *Acta zool. Acad. Sci. hung.* **30**: 225, fig 17. Holotype ♂ (TTM), China, North Yunnan, Li-kiang [Lijiang] (synonymised by Mironov & Galsworthy (2004)).

This species was treated in Mironov, Galsworthy & Ratzel (2008*b*). Prout (1926) recorded a single female from the Swann collection from northern Myanmar, which remains in the BMNH series.

Range. South and western Himalayas (Pakistan, Jammu and Kashmir, Nepal, India [Himachal Pradesh, Uttar Pradesh, Sikkim], Bhutan) to S. China (Sichuan, Yunnan) and northern Myanmar.

Eupithecia albispumata Warren, 1893

Eupithecia albispumata Warren, 1893, *Proc. zool. soc. Lond.* **1893**: 384, pl. 30, fig. 23. Lectotype ♂ (BMNH), [India], Khasi Hills.

Eupithecia pengata Schütze, 1961, *Veröff. zool. StSamml. Münch.* **6**: 180, pl. 29, figs 2, 7; pl. 30, figs 3, 3a, 3b; pl. 31, fig. 1. Holotype ♂ (ZSM), Nepal, Mustangbhot, 29°11′N, 83°58′E, Penga, 3,800 m.

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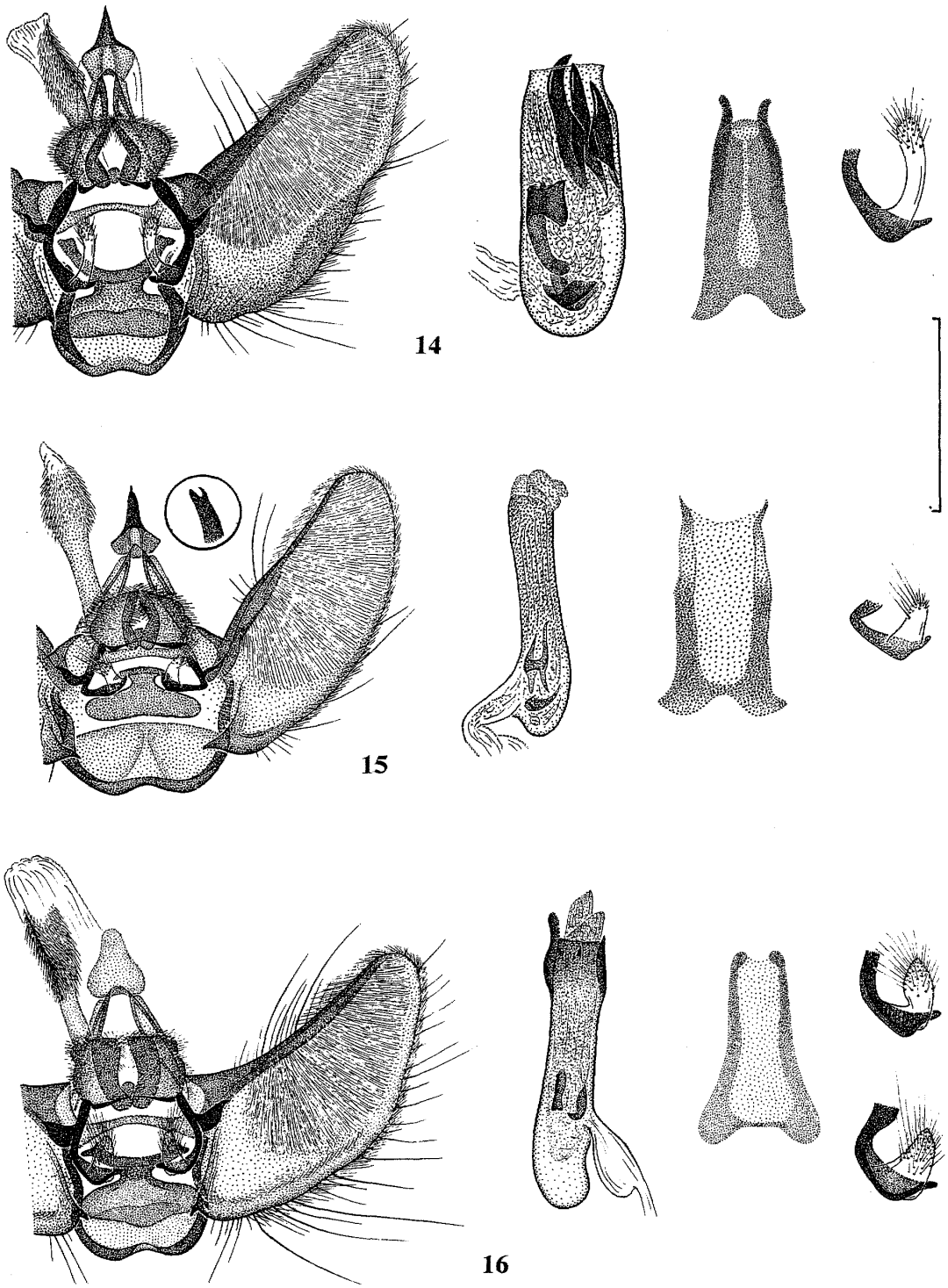

Figs 14–16. Male genitalia of *Eupithecia* species (scale bar=1 mm: with sternite A8, and lateral view of uncus and papillae on the anterior arms of labides enlarged). 14. *E. russeola* Prout, 1926. 15. *E. niveivena* Prout, 1928. 16. *E. anasticta* Prout, 1926.

Eupithecia acseszteri Vojnits, 1988, *Acta zool. Hung.* **34**: 50, figs 30–32, pl. 1: C. Holotype ♂ (NSMT), Nepal (east), Solukhumbu Sagarmatha, Kharikhola, 1,980 m.

This species was fully treated in Mironov *et al.* (2008*b*). Prout (1926) recorded two speci-

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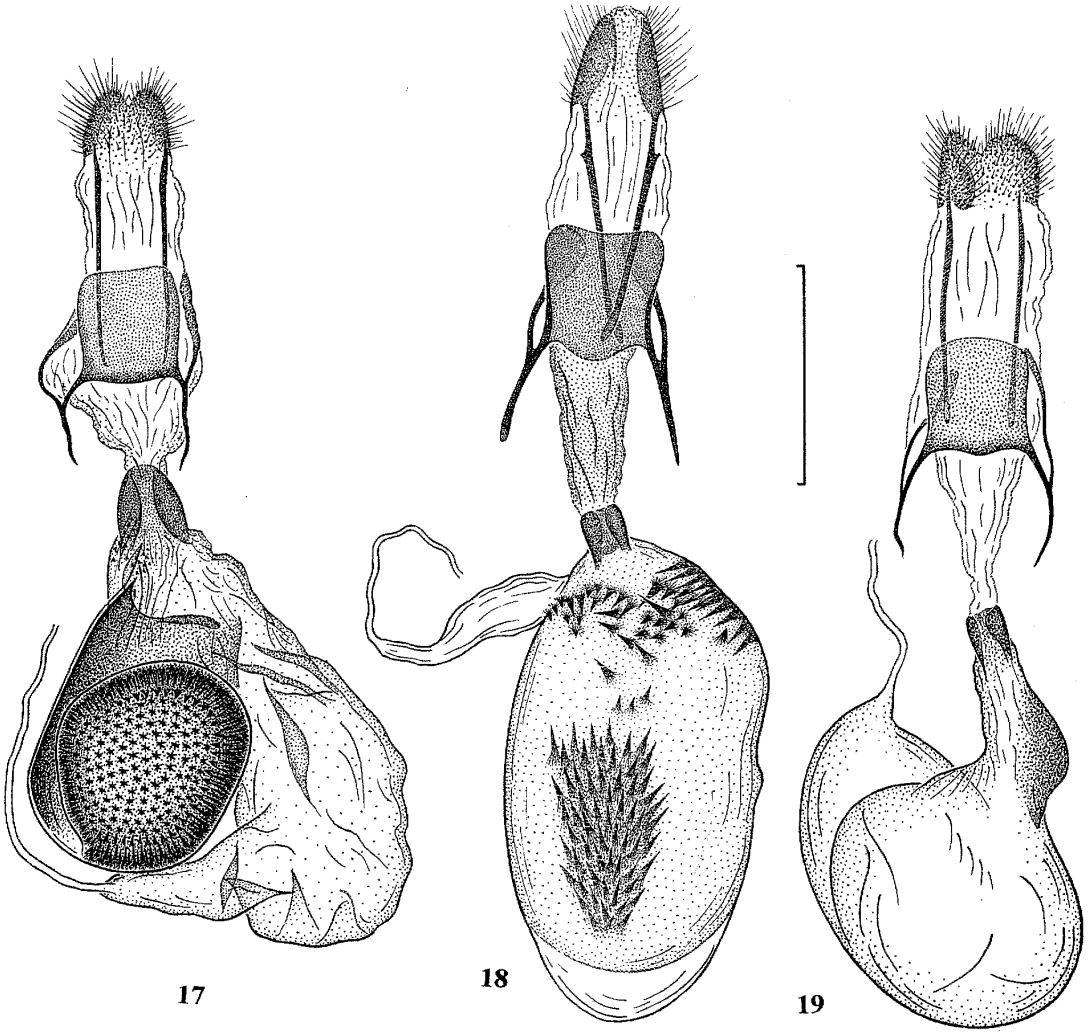

Figs 17–19. Female genitalia of *Eupithecia* species (scale bar=1 mm). 17. *E. russeola* Prout, 1926. 18. *E. anasticta* Prout, 1926. 19. *E. niveivena* Prout, 1928.

mens from the Swann collection from northern Myanmar, which are the only two S. E. Asian specimens we have seen.

Range. South and western Himalayas (Nepal, Assam) to S. China (Yunnan) and northern Myanmar.

Eupithecia leucostaxis Prout, 1926

Eupithecia leucostaxis Prout, 1926, *J. Bombay nat. Hist. Soc.* **31**: 318. Holotype ♀ (BMNH), [Burma (upper)]: Hpimaw Fort.

Eupithecia deprima Vojnits, 1974, *Acta zool. Acad. Sci. Hung.* **20**: 223, figs 3a–e. Holotype ♀ (ZFMK), China: North Yuennan, Li-kiang [Lijiang] (synonymised by Inoue (2000)).

This species was originally described by Prout from 2 specimens in the Swann collection from northern Myanmar. It was treated in Mironov *et al.* (2008*a*), and illustrated in Inoue (2000). We have seen no recent material from SE. Asia.

Range. Western and southern Himalayas (Nainital, Nepal, Tibet and Yunnan) to northern

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Myanmar.

Eupithecia sinicaria Leech, 1897 (Fig. 6)

Eupithecia sinicaria Leech, 1897, *Ann. Mag. nat. Hist.* (6) **20**: 68, (*Eupithecia*). Holotype ♂ (BMNH), China (western): Che-tou.

Eupithecia fulcrata Prout, 1958, *Bull. Br. Mus. nat. Hist.* (Ent.) **6** (12): 393, (*Eupithecia*). Holotype ♂ (BMNH), Burma (north-western): Htawgaw, 6,000 ft. **Syn. n.**

Having examined the holotypes of *E. sinicaria* and *E. fulcrata*, we conclude that they belong to the same species. The external patterning is similar, though not completely identical, but other material which we have examined and attribute to *E. sinicaria* is also quite variable. The male genitalia do not differ greatly among species in this group, except sometimes in the shape of the eighth sternite: in this case the sternite has outwardly curved arms shaped rather like the pincers of an earwig, and is identical in both cases.

Range. China (Tibet, Shaanxi, Yunnan), Myanmar.

Examined material. 1♂, [China], Che-tou, 11,070 ft., Native coll., July & Aug. 1890, *E. sinicaria* sp. n. Type ♂, Leech Coll. 1900-64, Genitalia photographed B. M. Negs. 19451-2, BM Geom. slide no. 3523 (holotype, BMNH); 1♂, Htawgaw, N. E. Burma, 6,000 ft., A. E. Swann, iv–v. (19)23, *Eupithecia fulcrata* Prout, ♂ type, abdomen g[uara]nteed, L. B. P., L. B. Prout Coll., B. M. 1939-643, Vojnits slide no.19314♂, Geometridae genitalia slide no. 20138 (holotype of *E. fulcrata*, BMNH).

Eupithecia melanolopha Swinhoe, 1895

Eupithecia melanolopha Swinhoe, 1895, *Ann. Mag. nat. Hist.* (6) **16**: 296. Holotype ♂ (BMNH), [India]: Cherrapunji.

Eupithecia owadai Vojnits, 1988, *Acta zool. hung.* **34**: 47, fig. 24; pl. 3, fig. F. Holotype ♀ (NSMT), Nepal (east): Solukhumbu Sagarmatha, Junbesi, 2,670 m.

A new species of the genus for the fauna of Vietnam. It is widespread in the S. E. Asian lowlands. It was fully treated and illustrated in Holloway (1997).

Range. Nepal, China (Shaanxi, Jiangsu, Hunan), Korea, Japan, Taiwan, India (Sikkim, Meghalaya), Sri Lanka, Thailand, Vietnam, Malaysia, Java, Bali, Borneo.

Examined material. 1♂, Cherra Punji, 1901-178, *Eupithecia melanolopha* Swinhoe ♂ type (holotype [abdomen missing], BMNH); 1♂, N. Vietnam, prov. Vinphu, Tamdao, 13. iv. 1986, V. Kuznetzov leg. (ZISP).

Eupithecia subtacincta Hampson, 1895

Eupithecia subtacincta Hampson, 1895, *Fauna Br. India* (Moths) **3**: 399. Syntype(s) ♀ (BMNH), [India]: Dharmsála.

Eupithecia tabidaria Inoue, 1955, *Tinea* **2**: 82. Holotype ♂ (BMNH), [Japan]: Tokyo, Takao-san.

Eupithecia gozmanyi ussurii Vojnits, 1972, *Annls hist.-nat. Mus. natn. hung.* **64**: 301. Holotype ♀ (ZFMK), [Russia]: Ussuri, Wladiwostok occ., Sutschanski-Rudnik.

Eupithecia minibursae Vojnits, 1973, *Annls hist.-nat. Mus. natn. hung.* **65**: 252, fig. 3a. Holotype ♀ (ZFMK), [Russia]: Ussuri, Sutchan.

Misidentification: *Eupithecia meszarosi* Vojnits, 1973 (paratype ♂).

Unavailable names (incorrect subsequent spelling): *Eupithecia gozmanyi ussuriensis*: Vojnits (1973).

A new species for the fauna of Vietnam. It appears to be widespread in the S. E. Asian lowlands. The synonymy was treated in detail in Mironov *et al.* (2008*a*).

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Range. Himalayan region from Jammu and Kashmir through China to the Russian Far East, Korea and Japan; SE Asia to Sundaland (Borneo).

Examined material. 1♀, *Eupithecia subtacincta* Hmpsn. type ♀, BM geom. slide no. 20937♀ (holotype, BMNH); 1♀, S. Vietnam, prov. Gia-Lai-Kon-Tum, Tram Lap, 20 km N Buon Luoi, 6. xii. 1988, V. Kuznetzov leg. (ZISP).

Eupithecia costalis (Walker, 1863)

Pena costalis Walker, 1863, *List Specimens lepid. Insects Colln. Br. Mus.* **27**: 130. Syntype(s) ♀ (BMNH), [Borneo] Sarawak.

Leiocera ferrisparsata Hampson, 1893, *Illust. typical Specimens Lepid. Heterocera Colln Br. Mus.* **9**: 41, 152, pl. 171, fig. 8. Syntype(s) ♀ (BMNH), Ceylon [Sri Lanka]: Pundaloya.

This species was treated in detail and illustrated in Holloway (1997). It is widespread in lowland regions of subtropical and tropical East and South Asia from Taiwan to India and to Borneo.

Eupithecia rigida Swinhoe, 1892

Eupithecia rigida Swinhoe, 1892, *Trans. ent. Soc. Lond.*, **1892**: 2, pl. 1, fig. 6. Syntypes 2♂ (BMNH), [India]: Khasi Hills.

Eupithecia rigida sporadica Prout, 1932, *Mem. Soc. Zool. Fr.* **29**: 442. Holotype ♀ (BMNH), Kenya: Taveta, 750 m (MNHN).

This species was also treated in detail and illustrated in Holloway (1997). It ranges from the Ryuku Islands through subtropical and tropical South East Asia as far East as New Caledonia, and as far West as the East coast of Africa and Madagascar (subsp. *sporadica* Prout, 1932).

Eupithecia jermyi Vojnits, 1976 (Fig. 7)

Eupithecia jermyi Vojnits, 1976, *Acta zool. Acad. Sci. hung.* **22**: 206, figs 1h, 2h. Holotype ♂ (ZFMK), [China]: Kuatun, 2,300 m.

Originally described from China (Fujian), this species is new for the fauna of Vietnam. It appears to be a spring species. Male and female genitalia are illustrated in Figs 22 and 25 respectively.

Examined material. 1♂, [China], [Fujian], Kuatun, 2,300 m, 27°40′n, Br. 117°40′ö.L., J. Klapperich, 4. iii. 1938 (Fukien), De Laever slide no. 426 (holotype, ZFMK); 1♂, Vietnam (N), Tonkin, Mt Fan Si Pan (N-Seite), Sa Pa (=Chapa), 2,240 m, 22°15′N, 103°45′E, Nebelwald, 3–4. iii. 1995, 8–4°C, *ex* coll./leg. Dr R. Brechlin (ZFMK); 4♂1♀, Vietnam, Prov. Lao Cai, Fan-si-pan Mts, 2,540 m, 6 km W Cat Cat, 14. iii. 1998, leg. L. Peregovits, T. Vásárhelyi, Mironov slide no. 573♀ (TTM, ZISP); 1♂, Vietnam, Prov. Lao Cai, 2650 m, Fan-si-pan Mts., 7 km W Sa Pa, 103°48′E, 22°18′N, 1–2. ii. 1999, leg. L. Peregovits & G. Ronkay (TTM); 3♂2♀, Vietnam, Prov. Lao Cai, 2,100 m, Fan-si-pan Mts, 6 km W Sa Pa, 103°48.5′E, 22°17.9′N, 3. ii. 1999, leg. L. Peregovits & G. Ronkay, Galsworthy slides nos ACG GL15(♂) and ACG GL18(♀) (TTM, coll. GL).

Eupithecia costiconvexa Inoue, 1979

Eupithecia costiconvexa Inoue, 1979, *Bull. Fac. dom. Sci. Otsuma Wom. Univ.* **15**: 178, figs 4J, K; fig. 5I; fig. 11C; fig. 12B. Holotype ♂ (BMNH), [Japan]: Kochi Pref[ecture], Muroto City, Sakinohama.

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A new species for the fauna of Thailand.

Range. Japan (Honshu, Shikoku, Kyushu, Tsushima, Yakushima), Thailand.

Examined material. 1♂, [Japan], Kochi Pref., Muroto City, Sakinohama, 21. iii. 1977, leg. T. Masui (holotype, BMNH); 1♂, Thailand, Chiangwat Chiang Mai, Mt Doi Phahompok, 18 km NW of Fang, 2,100 m, 7. ii. 2000, leg. Hreblay & Szabó, Mironov slide no. 580♂ (ZFMK); 1♀, Thailand, Prov. Chiang Mai, Mt Doi Phahompok, 20 km NW of Fang, 2,150 m, 23–25. i. 2004, leg. A. Szabó, Mironov slide no. 571♀ (coll. GL).

Eupithecia convexa Inoue, 1988

Eupithecia convexa Inoue, 1988, *Bull. Fac. dom. Sci. Otsuma Wom. Univ.* **24**: 328, figs 4a-f. Holotype ♂ (BMNH), [Taiwan]: Hualien Hsien, Tayuling, 2,600 m.

A new species for the fauna of Thailand.

Range. Taiwan, Thailand.

Examined material. 1♂, Taiwan, Tayuling, 2,600 m, Hualien Hsien, 23–24. iii. 1982, H. Yoshimoto leg., BM Geom. slide no. 16539 (holotype, BMNH); 1♀, Thailand, prov Chiengmai, Mt Doi Inthanon, NP, 2,300 m, 19. i. 2004, leg. A. Szabó, slide no. ACG GL85 (coll. GL); 1♂, same locality, 18°34′N, 98°59′E GPS, 2,300 m, 17. 1. 1997, leg. Malicky, Mironov slide no. 614♂ (ZSM); 1♀, Vietnam (N), Tonkin, Mt Fan Si Pan, Sa Pa (=Chapa), 22°15′N, 103°45′E, (N-Seite), 2,240 m, Nebelwald, 3–4. iii. 1995, 8–4°C, *ex* coll./leg. Dr R. Brechlin, Mironov slide no. 607♀ (ZFMK).

Eupithecia leucospila (Swinhoe, 1906) (Fig. 8)

Tephroclystia leucospila Swinhoe, 1906, *Ann. Mag. nat. Hist.* (7) **17**: 380. Syntype(s) ♂ (BMNH), [India]: Khasi Hills.

A new species for the fauna of Thailand.

Range. India (Assam), Thailand.

Examined material. 1♂, [India], Khasis, Nat. Coll. 1906-118, '*Tephroclystia leucospila* ♂ type' (lectotype here designated, BMNH); 1♂, N-Thailand, Nan Prov., Pua Dol Phu Kha km 35, 1,680 m, 16–23. ii. 1993, leg. D. Stüning (ZISP); 1♂1♀, Thailand, Changwat Nan, 30 km E of Pus, 1,700 m, 5. ii. 2000, leg. Márton Hreblay (ZFMK, ZISP).

Note. Swinhoe's original description gives only the information "Khasia Hills—a good series". There are numerous specimens from the Khasi Hills in the BMNH series, many of which predate Swinhoe's description, and we cannot now tell which of these were available to Swinhoe. We therefore designate as lectotype the specimen labelled in Prout's handwriting as type, in order to stabilise the nomenclature.

Eupithecia quadripunctata Warren, 1888

Eupithecia quadripunctata Warren, 1888, *Proc. zool. Soc. Lond.* **1888** (3): 331. Holotype ♀ (BMNH), Western India, Thundiani.

Eupithecia tricornuta Inoue, 1980, *Bull. Fac. dom. Sci. Otsuma Wom. Univ.* **16**: 153, fig. 35A; fig 36A; figs 39A–D; fig. 42A. Holotype ♂ (BMNH), Japan, Nipppara, Tokyo-To.

Eupithecia abiecta Vojnits, 1980, *Acta zool. Hung.* **26** (4): 439, figs 7, 8, 20. Holotype ♂ (ZFMK), China, S.Shensi [Shaanxi], Qinling Mts, Tapaishan in Tsinling [Dabaishan in Quinling], 3,000 m.

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A new species for the fauna of Thailand.

Range. Pakistan, Nepal, China (Shanxi, Shaanxi), Korea, Russia (Primorje), Japan, Taiwan, N. Thailand.

Examined material. 1♀, Thundiani 30/4/87, 87.162, *Eupithecia quadripunctata* n. sp., BM Geom. slide no. 20119 (holotype, BMNH); ♂, [Japan], Nippara, Tokyo-To, 12. v. 1962, T. Ebato, BM Geom. slide no. 16373 (holotype of *E. tricornuta*, BMNH); ♂, [China], Tapaishan im Tsinling, Sued-Shensi, *ca* 3,000 m, 11. viii. 1936, H. Höne, Vojnits slide no. 12336 (holotype of *E. abiecta*, ZFMK); 2♂, Thailand, prov. Chiengmai, Mt Doi Phahompok, 20 km NW of Fang, 2,150 m, 23–25. i. 2004, leg. Attila Szabó (coll. GL).

Note. The synonymy of this species was dealt with extensively in Mironov *et al.* (2008*b*).

Eupithecia hainanensis Mironov & Galsworthy, 2004

Eupithecia hainanensis Mironov & Galsworthy, 2004, *Trans. lepid. Soc. Japan* **55**: 127, figs 8, 23, 26. Holotype ♂ (IZCAS), China, Hainan, Jianfengling.

A new species for the fauna of Thailand.

Range. China (Hainan), Thailand.

Examined material. 1♂, [China], Hainan, Jianfengling, 21. xii. 1983, coll Liu Yuanfu, slide no. L-2554 (holotype, IZCAS); 3♂4♀, Thailand, prov. Chiengmai, 1,800 m, 4 km S of Kop Dong, 99°03′E, 19°52′N, 6. xi. 2002 (1♂, 11. xi. 2002), leg. B. Herczig & G. Ronkay (coll. GL).

Eupithecia nigrinotata Swinhoe, 1895 (Fig. 9)

Eupithecia nigrinotata Swinhoe, 1895, *Ann. Mag. nat. Hist.* (6) **16**: 296. Syntypes ♂ (BMNH), [India]: Shillong.

A new species for the fauna of Thailand.

Range. Nepal, India (Assam), Thailand.

Examined material. 1♂, Khasi Hills 94-224, Shillong, *Eupithecia nigrinotata* Swinhoe ♂ type, BM Geometrid slide no. 16417 (syntype, BMNH); 1♀, Thailand, prov Chiengmai, 450 m, Mok Fa Garden Resort, 98°48′E, 19°06′N, 1. xi. 2002, leg. B. Herczig & G. Ronkay (coll. GL).

Eupithecia phulchokiana Herbulot, 1984 (Fig. 10)

Eupithecia phulchokiana Herbulot, 1984, *Miscnea. Ent.* **50** (2): 45, figs 6, 13. Holotype ♂ (ZSM), Nepal: 20 km SSE of Katmandu, Phulchoki road, 2,400 m.

A new species for the fauna of Thailand.

Range. Nepal, Thailand.

Examined material. 1♂, Nepal, 20 km SSE Katmandu, Route du Phulchoki, 2,400 m, 2. x. 1983, C. Herbulot, *Eupithecia phulchokiana* Hrblt HOLOTYPE, (holotype, ZSM); 1♂ Thailand, prov Chiengmai, M Doi Phahompok, 20 km NW of Fang, 2,150 m, 23–25. i. 2004, leg. Attila Szabó (coll. GL).

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Eupithecia garuda Galsworthy & Mironov, 2005

Eupithecia garuda Galsworthy & Mironov, 2005, *Trans. lepid. Soc. Japan* **56**: 232, figs 11, 17, 23. Holotype ♀ (BMNH), India, West Bengal, Tiger Hill, alt. 2,573 m.
Misidentification: *Eupithecia tricrossa*: sensu Inoue, 2000 (*nec* Prout, 1926).

A new species for the fauna of Laos.

Range. Nepal, India (West Bengal), Thailand, Laos.

Examined material. 1♀, India, West Bengal, Tiger Hill, alt 2,573 m, 30. ix–5. x. 1986, F. Aulombard et J. Plante leg., BMNH(E) 2003-99, Inoue slide no. 13116 (holotype, BMNH); 1♀, Laos, Sam Neua, Phu Pan, 1,750 m, 15–17. x. 2005, Mamoru Owada leg. (NSMT).

Eupithecia balintzsolti Vojnits, 1988 (Fig. 11)

Eupithecia balintzsolti Vojnits, 1988, *Acta zool. Hung.* **34**: 49, figs 27–29, pl. 1, fig. H. Holotype ♂ (NSMT), Nepal (east): Bagmati Zone Sindhu Palati, 1,200 m.
Unavailable names (incorrect subsequent spelling): *Eupithecia belintzsolti*: Inoue (2002).

A new species for the faunas of Thailand and Laos.

Range. Nepal, Thailand, Laos.

Examined material. 1♂, E. Nepal, Bagmati Zone, Sindhu, Palati, 1,200 m, 14. x. 1979, leg. M. Owada, Vojnits gen. prep no. 14692, Holotypus *Eupithecia balintzsolti* det. A. Vojnits (holotype, NSMT); 1♂, Laos, Sam Neua, Phu Pan, 1,750 m, 15–17. x. 2005, Mamoru Owada leg., Galsworthy slide no. ACG NSMT-15 (NSMT); 1♀, N. Thailand, Chiangmai Prov., Doi Phahompok, 2,050 m, 26–27. xi. 2000, leg. D. Stüning, Mironov slide no. 578 (ZFMK); 2♂, same locality, 1,850 m, 25–27. xi. 2000, leg. D. Stüning, Mironov slide no. 579 (ZFMK).

Eupithecia cuneata Vojnits, 1984

Eupithecia cuneata Vojnits, 1984, *Acta zool. Acad. Sci. hung.* **30**: 214, fig. 3. Holotype ♂ (TTM), China: North Yuennan, Li-kiang [Lijiang].
Eupithecia proba Mironov & Galsworthy, 2004, *Trans. lepid. Soc. Japan* **55**: 229, figs 4, 16. Holotype ♂ (ZFMK), [China]: North Yunnan, Li-kiang [Lijiang], 2,000 m. **Syn. n.**

Described from SW China (Yunnan Province), a new species for the faunas of Myanmar and Thailand. We have now found one male and five females in material from Thailand and one male from Myanmar, and add here a description and illustration of the female genitalia of *E. cuneata* for the first time. We have concluded from a close examination of both holotypes that the series described by us as a new species, *E. proba*, is in fact identical to *E. cuneata*, and therefore sink *E. proba* as a junior synonym of *E. cuneata*.

Female genitalia (Fig. 24). Bursa copulatrix globular, almost completely covered with spines, except for a small area in posterior part on right side. Ductus bursae long, sinuate, membranous, but with a sclerotized and longitudinally striate base on right side, strongly prominent in posterior half on right side, completely covered with minute spinules in posterior part between base of ductus seminalis and colliculum. Ductus seminalis narrow, slightly broadened at base, attached to basal part of ductus bursae on left side. Colliculum collar-like, relatively short and narrow, slightly inclined to left. Antrum membranous. Tergite A8 elongate, broadened in posterior part, with sclerotized and medially convex anterior margin and convex, rounded posterior margin. Anterior and posterior apophyses relatively elongate, thick; posterior apophyses slightly expanded and flattened at apices. Papillae anales

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broad, but sharply tapered and pointed to apices, covered with sparse setae.

Examined material. 1♂, [China], Provinz Nord-Yuennan, Li-kiang, 11. xi. 1934, H. Höne, Vojnits slide no. 13771 (holotype, TTM); 1♂, [China], North Yunnan, Likiang [Lijiang], *ca* 2,000 m, 17. ix. 1934, H. Höne, Vojnits slide no. 13069 (holotype of *E. proba*, ZFMK); 9 , [China], North Yunnan, Li-kiang [Lijiang], 13, 18, 21 and 25. ix. (2), 17. x. 1934, 3, 14 and 24. ix. 1935, H. Höne, respectively Vojnits slide no. 13185, De Laever slides nos 358, 381, 127, Vojnits slides nos 12509, 13167, 13172, 13180, 13181 (paratypes of *E. proba*, ZFMK); 1♂1♀, Thailand, Chiangmai, Doi Suthep, Meo Village, View Point, 1,325 m, 22. xi–4. xii. 1989, leg. Schnitzler, Mironov slide no. 597♂ (ZFMK); 2♀, N. Thailand, Chiangmai Prov., Doi Phahompok, 1,850 m, 25–27. xi. 2000, leg. D. Stüning, Mironov slide no. 598♀ (ZFMK); 2♀, same locality, 2,050 m, 26–27. xi. 2000, leg. D. Stüning, Mironov slide no. 599♀ (ZFMK); 1♂, W. Myanmar, Chin State, 16 miles W. Mindat, 16 miles Camp, prim. forest, 21°23′N, 93°50′E, 2,500 m, 10–11. x. 2002, at light, leg. W. Mey & S. Naumann (ZFMK).

Eupithecia raniata Prout, 1958 (Fig. 12)

Eupithecia raniata Prout, 1958, *Bull. Br. Mus. nat. Hist.* (Ent.) **6** (12): 391. Holotype (BMNH), India: Darjeeling.

Eupithecia darjeelica Inoue, 2000, *Tinea* **16** (Suppl. 1): 32, pl. 165, fig. 16; fig. 1293. Holotype ♂ (BMNH), [NE India]: Darjeeling, 2,000 m. **Syn. n.**

New for the fauna of Myanmar.

Range. India (West Bengal), Nepal, Myanmar, N. Thailand.

Examined material. 1 , [India], Darjeeling, Aug 1904, *Eupithecia raniata* Prout type ♂, Rothschild bequest 1939-1, BM geom. slide no. 16421 (holotype, BMNH); 1♂, [NE India], Darjeeling (town), 2,000 m, 11–20. viii. 1985, *ex* J. M. Cadiou, Inoue slide no. 15956 (holotype of *E. darjeelica*, BMNH); 2 , W. Myanmar, Chin State, *ca* 6 miles W. Kanpetlet, way to Mt. Viktoria, prim. forest/pine forest, 21°12′N, 93°59′E, 2,060 m, 3. x. 2002, at light, leg. W. Mey & S. Naumann, Mironov slides nos 600♂, 601♂ (ZFMK); 1♂, W. Myanmar, Chin State, 16 miles W. Mindat, 16 miles Camp, prim. forest, 21°23′N, 93°50′E, 2,500 m, 10–11. x. 2002, at light, leg. W. Mey & S. Naumann, Mironov slide no. 602♂ (ZFMK); 1♂, W. Myanmar, Chin State, 9–12. x. 2002, at light, leg. W. Mey & S. Naumann, Mironov slide no. 603♂ (ZFMK).

Eupithecia rajata Guenée, 1858

Eupithecia rajata Guenée, 1858, in Boisduval and Guenée, *Hist. nat. Insectes* (Spec. gén. Lépid.) **10**: 328. Holotype ♀ (nec ♂) (BMNH), India (central).

Eupithecia apparticeps Inoue, 2000, *Tinea* **16** (Suppl. 1): 29, pl. 165, fig. 6; fig. 1327. Holotype ♀ (BMNH), [Nepal]: [Kathmandu], Godavari, 1,600 m.

A new species for the fauna of Thailand and Myanmar. The identity and synonymy of *E. rajata* was dealt with extensively in Mironov *et al.* (2008*b*).

Range. India, Myanmar, Thailand.

Examined material. 1♂, Typicum Specimen, Ex Musaeo Ach. Guenée, *Rajata* Gn. Inde., Silma, Ex Oberthür Coll. Brit. Mus. 1927-3, Holotypus *Eupithecia rajata* ♀ abdomen on ♂ body, gen. no. 19349, det. A. Vojnits, BM Geom. slide no. 16414 (holotype, BMNH); 1♀, Nepal, Kathmandu, Godavari, 1,600 m, 26. ii. 1992, Inoue slide no. 15927♀ (holotype of *E. apparticeps*, BMNH); 1♂, N-Thailand, Nan Prov., Pua, Dol Phu Kha km 35, 1,680 m, 1. iii.

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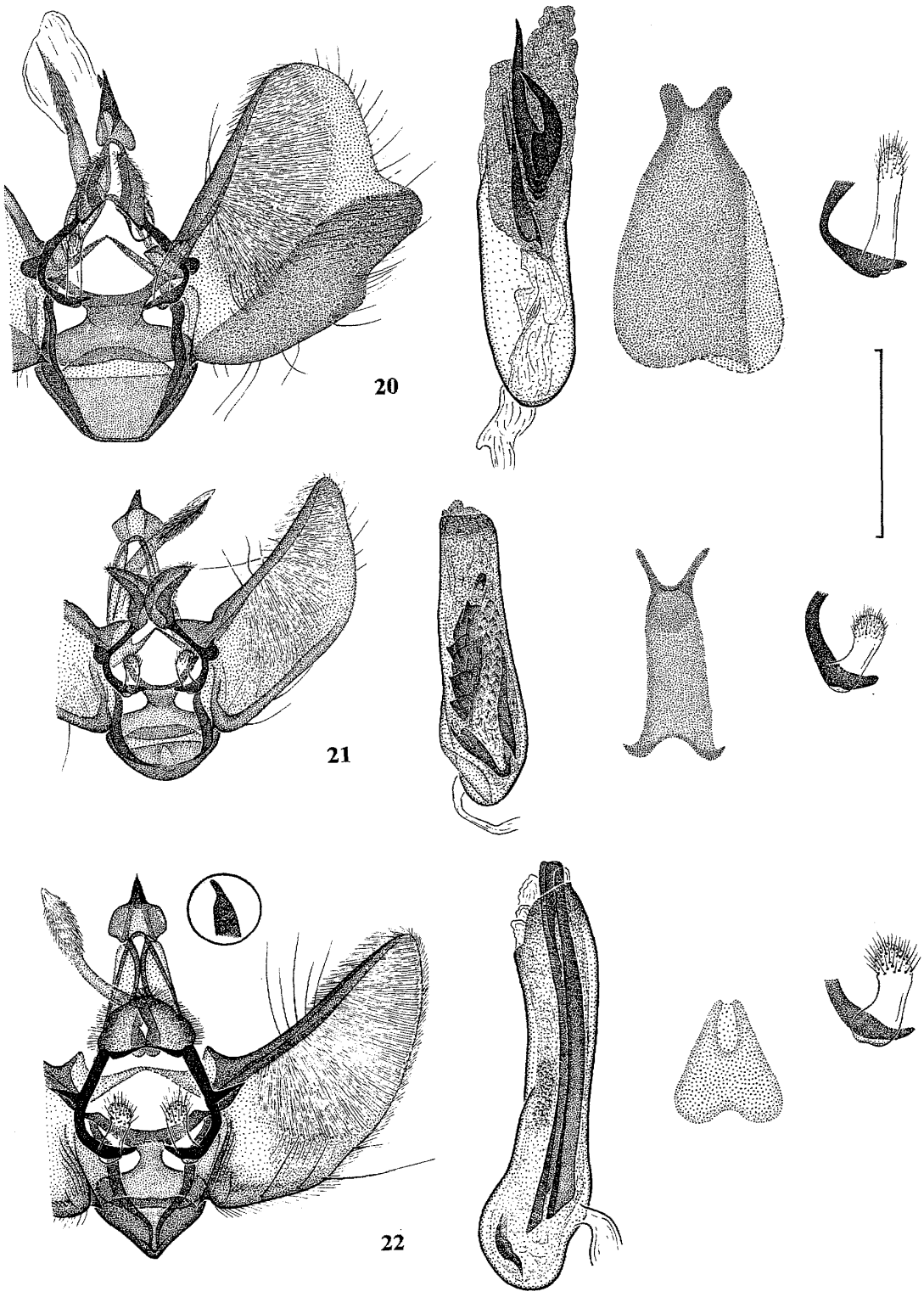

Figs 20–22. Male genitalia of *Eupithecia* species (scale bar=1 mm: with sternite A8, and lateral view of uncus and papillae on the anterior arms of labides enlarged). 20. *E. acyrtoterma* Prout, 1926. 21. *E. leucenthesis* Prout, 1926. 22. *E. jermyi* Vojnits, 1976.

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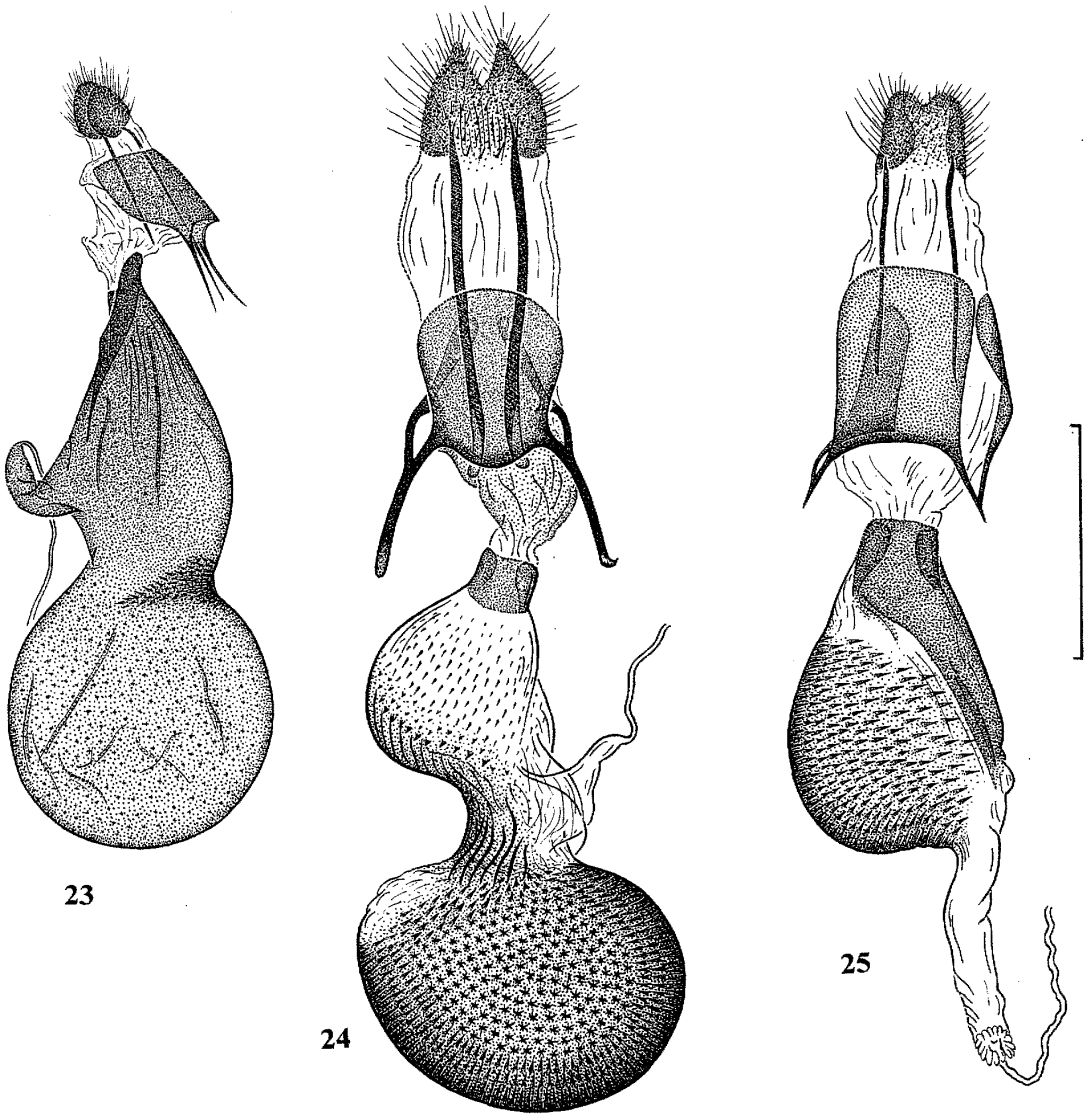

Figs 23–25. Female genitalia of *Eupithecia* species (scale bar=1 mm). 23. *E. leucenthesis* Prout, 1926. 24. *E. cuneata* Vojnits, 1984. 25. *E. jermyi* Vojnits, 1976.

1993, leg. D. Stüning, Mironov slide no. 608 (ZFMK); 1♀, Thailand, Prov. Chiang Mai Prov., Mt. Doi Phahompok, 20 km NW of Fang, 2,150 m, 23–25. i. 2004, leg. A. Szabó, Mironov slide no. 610♀ (coll. GL); 1♀, W. Myanmar, Chin State, *ca* 2 miles W. Kanpetlet, Chin Village Camp, 21°12′N, 94°01′E, 1,700 m, 2. x. 2002, at light, leg. W. Mey & S. Naumann, Mironov slide no. 609 (ZFMK).

Eupithecia hemileuca Hampson, 1895

Eupithecia hemileuca Hampson, 1895, *Fauna Br. India* (Moths) **3**: 401. Syntype(s) ♂ (BMNH), [India]: Dalhousie.

This is a new species for the fauna of South East Asia and Thailand in particular. It was illustrated in Mironov *et al.* (2008*a*).

Range. India (Punjab), Thailand.

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Examined material. 1♂, [India], Dalhousie, 92-98 Harford Coll. 13/4/91, *Eupithecia hemileuca* Hmpsn. type ♂, BM Geom. slide no. 20137 (holotype, BMNH); 1♂, N-Thailand, Nan Prov., Pua Dol Phu Kha km 35, 1,680 m, 18 and 20. ii, 1. iii. 1993, leg. D. Stüning (ZFMK); 1♀, Thailand, Changwat Chiang Mai, Mt Doi Phahompok, 14 km NW of Fang, 2,000 m, 14. ii. 2000, leg. Márton Hreblay (ZFMK); 2♂, prov Chiengmai, 1,800 m, between Fang and Nor Lai, 99°06′E, 19°52′N, 29–30. x. 2002, leg. B. Herczig & G. Ronkay (coll. GL).

Eupithecia invicta Vojnits, 1981

Eupithecia invicta Vojnits, 1981, *Annls hist.-nat. Mus. natn. hung.* **73**: 226, fig. 9. Holotype ♂ (SMNK), India (north): Kumaon [=Kumaun] Bhimtal (Nainital), 1,450 m.

Eupithecia acuta Vojnits, 1983, *Acta zool. Acad. Sci. hung.* **29**: 276, fig. 23. Holotype ♀ (ZSM), Nepal: Prov. Nr. 2, East Jiri, 2,000 m (synonymised by Mironov *et al.* (2008*b*)).

This is a new species for the fauna of South East Asia and Thailand in particular. It was illustrated as *E. acuta* in Inoue (2000).

Range. Nepal, India (Kumaon, Meghalaya), China (Yunnan, Shanxi), Thailand, Vietnam.

Examined material. 1♂, Nord-Indien/Kumaon, Bhimtal (Nainital), 1,450 m, 23. ix. 1973, Lichtfang, leg. S. Richter, Vojnits slide no. 12126 (holotype; SMNK); 1♀, Nepal, Prov. Nr. 2, East Jiri, 2,000 m, 6. iv. 1964, leg. W. Dierl, Vojnits slide no. 10642 (holotype of *E. acuta*; ZSM); 1♂3♀, N-Thailand, Nan Prov., Pua Dol Phu Kha, km 35, 1,680 m, 18 and 22. ii. 1993. leg. D. Stüning (ZFMK); 4♂6♀, NE India, Meghalaya, Nokrek Nat. Park, Garo Hills, 1,150 m, 25°25′N, 90°20′E, 13–22. xii. (19)97, leg. Siniaev *et al.*, *ex* Coll. A. Schintlmeister, Mironov slides nos 604♂, 605♀ (ZFMK, ZISP); 1♂, Thailand, Changwat Chiang Mai, Mt Doi Phahompok, 18 km NW of Fang, 2,100 m, 7. ii. 2000, leg. H. Hreblay & Szabó; 1♀, same locality, 14 km NW of Fang, 2,000 m, 14. ii. 2000, leg. Márton Hreblay, Mironov slide no. 606♀ (ZFMK).

Eupithecia nigrilinea (Warren, 1896)

Tephroclystia nigrilinea Warren, 1896, *Novit. zool.* **3**: 317. Holotype ♀ (BMNH), [India]: Kasauli.

Eupithecia ingrata Vojnits, 1981, *Annales hist.-nat. Mus. natn. hung.* **73**: 224, fig. 4. Holotype ♀ (SMNK), Pakistan (west): Swat, N of Kalan Gabral-Tal, 2,100 m.

Eupithecia ingrata talvei Viidalepp, 1988, *Fauna pyadenits gor Srednej Azii [Geometridae fauna of the Central Asian mountains]*: 121, pl. 2, fig. 18; text-pl. 26, figs 5–10. Holotype ♂ (IAET), Tadzh. SSR [Tajikistan]: Gissarsky Mts, southern slope, River Khonaka, Shamol.

This is a new species for the fauna of South East Asia and Thailand in particular. The synonymy of this species was dealt with in Mironov *et al.* (2008*c*). It was illustrated in Inoue (2000).

Range. Uzbekistan, Kyrghyzstan, Tajikistan, Pakistan, Jammu and Kashmir, Nepal, N. Thailand.

Examined material. 1 , Kasauli aug. 1893, *nigrilinea* Warr. Type ♀ (holotype, BMNH); ♀, W-Pakistan, Swat, N v. Kalam, Gabral-Tal, 2,100 m, 6–9. vii. 1969, leg. G. Ebert, Vojnits slide no. 12092 (holotype of *E. ingrata*, SMNK); 1♂, Tajik. SSR [Tajikistan], Ghissarsky Mts, southern slope, Khonaka river, Shamol, 7. vi. 1976, leg. Talve (holotype of *E. ingrata talvei*, IAET); 1♂1♀, Thailand, Chiangmai, Doi Suthep, Meo Village, View Point, 1,325 m, 22. xi–4. xii. 1989, leg. Schnitzler (ZFMK, ZISP); 2♀, Thailand, prov. Chiengmai, 1,800 m, 4 km S of Kop Dong, 99°03′E, 19°52′N, 6. xi. 2002, leg. B. Herczig & G. Ronkay (coll.

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Eupithecia mundiscripta (Warren, 1907)

Tephroclystia mundiscripta Warren, 1907, *Novit. zool.* **14**: 161. Syntypes 2♂ (BMNH), British New Guinea [Papua New Guinea]: Upper Mambaré River, Biagi, 5,000 ft.

Eupithecia mundiscripta commundata Prout, 1958, *Bull. Br. Mus. nat. Hist.* (Ent.) **6** (12): 393. Holotype ♀ (BMNH), [Borneo]: Mt Kinabalu.

Eupithecia mundiscripta larutensis Prout, 1958, *Bull. Br. Mus. nat. Hist.* (Ent.) **6** (12): 394. Holotype ♀ (BMNH), Malaya [West Malaysia]: Perak, Larut Hills, 3,700 ft.

Eupithecia sekkongensis Galsworthy, 1999, *Trans. lepid. Soc. Japan* 50: 232, figs 7, 22. Holotype ♂ (BMNH), Hong Kong: Shek Kong, New Territories. **Syn. n.**

Originally described from New Guinea, this is predominantly a lowland species, and seems to be very wide-ranging. It was illustrated in Holloway (1997). Reexamination of the holotype of *E. sekkongensis* Galsworthy shows that it is conspecific with *E. mundiscripta*, a very considerable range extension. However, the species has now been discovered in addition from Taiwan. It is known in the tropics from July to March, but in Hong Kong and Taiwan appears to be strictly a winter species. Apart from Taiwan, its range is here extended to India (Meghalaya), Thailand and the Philippines. It is also found in Vietnam, Malaysia, Sumatra, Borneo and Seram.

Examined material. 1♀, Biagi, Mambare R., 5,000 ft., B. N. G. [British New Guinea], Feb [19]06, (A. S. Meek), *Tephroclystia mundiscripta* Type ♀ (*sic*), Warren, Rothschild bequest 1939-1, BM Geom. slide no. 18890 (syntype, BMNH); 1♀, Nord Bornéo: Mont Kina Balu, 5. viii. 1903, John Waterstradt, *Eupithecia mundiscripta commundata* Prout, ♀ type, *Ex* Oberthür Coll., Brit. Mus. 1927-3 (holotype of *E. commundata*, BMNH); 1♀, [Malaysia], Perak F. M. S. Larut Hills, at light, 3,700 ft., 13. ii. 1932, H. M. Pendlebury, 1892, *Eupithecia larutensis* Prout ♀ type *(mundiscripta* f.?), Brit. Mus. 1939-220 (holotype of *E. mundiscripta larutensis*, BMNH); 1♂, Shek Kong, New Territories, Hong Kong, 12. i. 1997, leg. R. C. Kendrick, BM Geometrid slide no. 19636 (holotype of *E. sekkongensis*, BMNH); 3♂1♀, Taiwan, Taipei County, Taipei, Nanshih Chiao, Han-Lo-Dae, 450 m, December 2001, leg. A. Kun & L. Ronkay (TTM); 1♀, Taiwan, Nantou County, Hui-Sun Exp. Forest Area, 15 km N of Puli, 950 m, 24°04′49 N, 121°02′08 E, 3, 4. i. 2002, leg. A. Kun & L. Ronkay (TTM).

Note. Warren's original description cites two males: only one of these is in the BMNH series. There are also specimens of this species in the collection of ZFMK (Bonn) from the following localities: NE. India (Meghalaya), Thailand (Changwat Nan) and Philippines (Mindanao and Luzon).

Eupithecia krampli Vojnits, 1979 (Fig. 13)

Eupithecia krampli Vojnits, 1979, *Acta zool. Acad. Sci. hung.* **25**: 437, fig. 16. Holotype ♀ (ZFMK), China: North Yuennan, Li-kiang [Lijiang].

A new species for the fauna of Myanmar.

Range. China (Sichuan, Yunnan), Myanmar.

Examined material. 1♀, Li-kiang (China), Provinz Nord-Yuennan, 22. vii. 1935, H. Höne, Gen. prep. no. 12243♀, Dr A. Vojnits, Budapest TTM (holotype, ZFMK); 1♂, Burma, 28.8N 97.24E, 11,000 ft., 29. vi. 1926, F. Kingdon Ward, BM Geom. slide no. 21838 (BMNH).

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Eupithecia peguensis Prout, 1958

Eupithecia peguensis Prout, 1958, *Bull. Br. Mus. nat. Hist.* (Ent.) **6** (12): 392. Holotype ♀ (BMNH), Burma: E Pegu, 4,000–5,000 ft.

Eupithecia torva Vojnits, 1983, *Acta zool. Acad. Sci. hung.* **29**: 271, figs 14, 17. Holotype ♂ (ZSM), Nepal: Kathmandu, 1,400 m. **Syn. n.**

A new species for the fauna of Thailand. It was illustrated in Inoue (2000).

Range. Nepal, Myanmar, Thailand, Vietnam (Upper Tonkin).

Examined material. 1♀, Type, E. Pegu, 4–5,000 ft., March-April 1890, W. Doherty, *Eupithecia peguensis* ♀ Prout type, BM Geom. slide no. 11446 (holotype; BMNH); 1♂, Nepal, Kathmandu, 1,400 m, 15. iv. 1962, leg. G. Ebert u. H. Falkner, Vojnits slide no. 10667 (=ZSM slide no. G10630) (holotype of *E. torva*, ZSM); 1♂1♀, N-Thailand, Nan Prov., Pua, Dol Phu Kha 35 km, 1,680 m, 16 and 18. ii. 1993, leg. D. Stuning (ZFMK); 1♂, Thailand, Changwat Chiang Mai, 23 km NW of Sop Kha, 1 km E of Kop Dong, 1,650 m, 29. i. 2000, leg. Márton Hreblay (ZISP).

Note. There are also specimens of this species (the total number and sexes were not recorded) in the collection of ZFMK (Bonn) with the following labels: Thailand, Changwat Nan, 5 km N of Bo Luang, 1,000 m, 4. ii. 2000, leg. M. Hreblay & Szabó; Thailand, Changwat Nan, 30 km E of Pua, 1,700 m, 5. ii. 2000, leg. M. Hreblay; Thailand, Changwat Chiang Mai, Mt Doi Phahompok, 14 km NW of Fang, 2,000, 14. ii. 2000, leg. M. Hreblay.

Eupithecia masculina Inoue, 1988

Eupithecia masculina Inoue, 1988, *Bull. Fac. dom. Sci. Otsuma Wom. Univ.* **24**: 364, figs 25a–e. Holotype ♂ (BMNH), [Taiwan]: Hualien Hsien, Tayuling, 2,600 m.

Eupithecia masculina Inoue, 1988, Mironov & Galsworthy, 2007: 357, fig. 28 (description of female genitalia).

New for the fauna of the Philippines.

Range. Taiwan, Philippines.

Examined material. 1♂, [Taiwan], Hualien Hsien, Tayuling, 2,600 m, 2–4. v. 1984, leg. H. Yoshimoto, BM Geom. slide no. 16549 (holotype; BMNH); 1♂, Philippinen, N. Luzon, Ifugao, Mt. Pulis, 16 km SSE Bontoc, 17°02′N L, 121°01′E Br. Nebelwald, primär 1,900 m, 9–13. ii. 1988, leg. Cerny & Schintlmeister, Mironov slide no. 594♂ (ZFMK).

Eupithecia kudoi Inoue, 1983

Eupithecia kudoi Inoue, 1983, *Tinea* **11** (16): 141, figs 5, 6a–e. Holotype ♂ (BMNH), [Taiwan]: Hualien Hsien, Tayuling, 2,565 m.

New for the fauna of Vietnam.

Range. Taiwan, Vietnam.

Examined material. 1♂, Taiwan, Tayuling, 2,565 m, Hualien Hsien, 27–29. iii. 1981, Coll. K. Kudo, BM Geom. slide no. 16449 (holotype, BMNH); 2♂2♀, Vietnam, Prov. Lao Cai, Fan-si-pan Mts, 2,540 m, 6 km W Cat Cat, 14. iii. 1998, leg. L. Peregovits, T. Vásárhelyi (TTM); 3♂, same locality and collectors, 2,050 m, 5 km W Cat Cat, 15. iii. 1998, Mironov slide no. 576♂ (TTM, ZISP).

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Eupithecia pannosa Mironov & Galsworthy, 2008

Eupithecia pannosa Mironov & Galsworthy, 2008, *Trans. lepid. Soc. Japan* **59**: 126, figs 3, 19, 20. Holotype (TTM), Pakistan: Kashmir, Himalaya Mts, Deosai Mts, Bubin village, 74°59′E, 35°12.6′N, 3,150 m.

A new species for the fauna of Vietnam.

Range. Pakistan, Nepal, Vietnam.

Examined material. 1♂, Vietnam, Prov. Lao Cai, Fan-si-pan Mts, 2,540 m, 6 km W Cat Cat, 14. iii. 1998, leg. L. Peregovits, T. Vásárhelyi, Mironov slide no. 577♂ (TTM).

Taxonomic changes introduced in the two parts of this paper

New species

Eupithecia skoui Mironov & Galsworthy
Eupithecia macrodisca Mironov & Galsworthy
Eupithecia szaboi Mironov & Galsworthy
Eupithecia tropicata Mironov & Galsworthy
Eupithecia thaica Mironov & Galsworthy
Eupithecia hreblayi Mironov & Galsworthy
Eupithecia ronkayi Mironov & Galsworthy
Eupithecia schnitzleri Mironov & Galsworthy
Eupithecia stueningi Mironov & Galsworthy
Eupithecia swanni Mironov & Galsworthy
Eupithecia burmata Mironov & Galsworthy
Eupithecia kuni Mironov & Galsworthy
Eupithecia peregovitsi Mironov & Galsworthy
Eupithecia herczigi Mironov & Galsworthy
Eupithecia laoica Mironov & Galsworthy

New synonymy

Eupithecia albicans Vojnits, 1981, of *Eupithecia leucenthesis* Prout, 1926
Eupithecia torva Vojnits, 1983, of *Eupithecia peguensis* Prout, 1958
Eupithecia sekkongensis Galsworthy, 1999, of *Eupithecia mundiscripta* Warren, 1907
Eupithecia darjeelica Inoue, 2000, of *Eupithecia raniata* Prout, 1958
Eupithecia proba Mironov & Galsworthy, 2004, of *Eupithecia cuneata* Vojnits, 1984
Eupithecia fulcrata Prout, 1958, of *Eupithecia sinicaria* Leech, 1897

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摘　　要

東南アジアのカバナミシャク属 II (V. G. MIRONOV・A. C. GALSWORTHY)

前報では東南アジア大陸部のカバナミシャク属の15新種を記載した. 今回の第2報では, 既知の36種を扱い, 6個の名称をシノニムとして整理した. また, 近年得られた材料によって各種の新しい分布地を記録し, 日本特産種であったマエテンカバナミシャク *E. costiconvexa* Inoue をタイから記録した.

末尾に, 本シリーズで記載した新種およびシノニムの一覧を添えた.

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